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College Microscopical Societies.

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What uses can a College Microscopical Society subserve? How can it be made a success? These questions have been thought to be of some interest. This paper will endeavor to answer them; first in the abstract and then by an illustration.

What is the need of such a society in a college?

1. The microscope is used in a wider range of departments of research than almost any other instrument. Botany, biology, lithology, chemistry, all call it to their aid; the physician uses it more and more in detecting the nature of diseases he treats; the dishonest dread its searching exposure of their frauds; even the geographer has lately used it in his search for the lost Atlantis. Hence a microscopical society in its range of topics can take in almost all the physical and social sciences, and an enthusiasm created in it will help many of the departments of college work.

2. Every year the incoming class introduces into a college a large number of minds with no particular bent, who have been occupied for years with the dry drill in mathematics and languages in the preparatory schools, and in few cases have been so fortunate as to encounter a teacher who has opened their eyes to the perfections of nature, or waked in them any interest in its study. If the microscopical society welcomes the freshman class to one of their exhibitions early in the year it awakens curiosity and stimulates interest in all the scientific studies upon which they are entering, and has been known to change the course of a student's electives from an exclusively classical line.

3. Such a society affords a means of exchange of the results and methods of work between the different departments of science, and enables those whose time must be largely given to work in one line to keep up in other departments. The papers called for give students an opportunity of clearly presenting subjects with illustrations, a useful exercise for all, especially those who expect to occupy the class-room or the lecture-room later.

4. There are interesting subjects of microscopic investigation which do not come under any department of college instruction; these can be brought out in the exhibits of the society.

5. A live society will not only awake interest in students and teachers, but it will attract the attention of college authorities, who control the funds, to the needs of scientific work, and will react for the benefit of all the laboratories of science to secure larger appropriations for apparatus and more excellent facilities for individual work.

Granting the advantages of such a society, how can it be made a success?

1. The conditions of success in such a society are the securing of desirable members, of good papers at the meetings on a variety of themes of interest, on the exhibits of objects under microscopes, on lantern projections in various lines, on demonstrations, on securing visits, whenever possible, from investigators of eminence from outside; in short, in keeping alive in every direction and getting just as much out of every one who can help as possible. These conditions of success are not secured otherwise than in the American Society of Microscopists. Persistent work has to be put into every detail, which does not show on the surface. Some of the leading instructors in college who have some intelligence in all departments of research, and who keep informed of the latest movements, must perseveringly help to assign the subjects, and start the novices investigating, often giving library references, providing material, and instructing in methods.

2. As the aims of such a club are somewhat different from those of the Royal Microscopical society of London, for example—rather to awaken an interest and give an impetus toward valuable investigation than to give the results of original work,—the membership

need not be of experts; in fact the condition of membership should not be skill, but enthusiasm. The members should be selected from all ranks in college. The professors and advanced students and college physician can give the results of their mature thought; the freshmen, by their exclaiming, fan the flame of enthusiasm, and before they can do anything alone with the microscope, can serve the society on the lamp committee. There should be but these conditions: some work with the microscope each week, and readiness to fulfill every appointment of the society.

3. It has been remarked in another connection that "it is better to get ten men at work than to do the work of ten men," though it seldom proves economy of labor to the leader. The interest is greater if the society is officered by students, and if all details of work possible, even if they have been minutely planned beforehand, be distributed to members so that everyone has something for which he is responsible.

4. A class in microscopical technology must be maintained apart from the regular work of the different departments. An exercise one hour a week is all for which most students can command time, aside from other work. Students who devote many hours a week to the use of the microscope in some one laboratory will come into this class to get a wider outlook and acquire skill in a variety of manipulations. The course of instruction should be a regular drill in the "gymnastics of the instrument," and use of accessory apparatus, until the worker can do without most of it, methods of micrometry, methods of mounting, etc. With all, there should be constant drill in observing, which can be much helped by requiring the careful drawing of objects studied in a book for the purpose. Just as soon as possible mere gazing through the instrument should cease, and some persevering line of investigation, if humble, undertaken.

5. There should be regular meetings at least once a month, at which papers are presented, which shall always embody some of the author's own work; these should be illustrated by blackboard drawings, objects under the microscope, and lantern projections, if possible. Programmes should be varied, and, in such a society, should not always aim to bring out what is new to the scientific world but what is new to the society. Demonstrations should be frequent.

6. A microscopical library is a necessity. Its size will depend on circumstances. It must contain general works on the microscope, sets of microscopical journals, micrographic dictionaries, etc. The current microscopical journals must be taken. These books should be in the laboratory at hand for use. Collections of slides are desirable, also of microscopes and accessory apparatus. The college lantern for projections adds much interest. Much could be done with little apparatus. Of course the educational value of the society can be greatly enhanced by rare works and rare slides and fine microscopes.

These suggestions are the outcome of an experience of six years in the Wellesley College Microscopical Society, which I think is unique in that it is a college society and composed entirely of ladies. The idea originated with Mr. H. F. Durant, the munificent founder of the college. He felt that a knowledge of the use of the microscope would be invaluable to teachers and in the home; that the organization of a society somewhat on the plan already selected would perhaps do what the scientific departments could not always do—search out those who had talent for research and increase the number of investigators. At first the conception of a society which should be largely educational instead of being for the exchange of the results of work among experts did not seem practical, but the writer of this paper was a convert to his idea, and the society was started with six members and when the college possessed but three microscopes. During the six years of its life there has been no flagging of interest in the meetings. The society can now command ninety microscopes from the various laboratories, and three large exhibitions, mostly of the individual work of members, which brought all these into requisition, have been given.

A large number of students have purchased instruments of their own on leaving college; several are known to have started local clubs; several to use the instrument in elementary teaching to interest their pupils in nature by giving talks and exhibitions now and then; several are pursuing their studies in advanced lines.

On comparing the enthusiasm in scientific work at Wellesley with some other colleges, it is acknowledged that the society has not been without influence. Of the plan of the meetings in detail, time will

not permit me to speak. It seems to me that this plan, with some modifications, will work admirably for local clubs. There is never interest in a subject of which one is ignorant. If some few persons in a town who have only slight knowledge or skill would start a club and take in those who have only thirst for information, and teach them what they know, and then advance with this fresh stimulus, in time the results would be astonishing. An elevating influence would be present in social life and the cause of science would profit.